

# A Nanoparticulate Photocatalytic Filter for Removal of Trace Contaminant Gases, Phase I

Completed Technology Project (2004 - 2004)



## Project Introduction

Maintaining a healthy atmosphere in closed life support systems is necessary for the well being of the crew and success of a space mission. Current trace contaminant control systems for removal of trace contaminant gases from cabin air are based on activated carbon filter and high temperature catalytic oxidation. However, activated carbon and high temperature oxidation air cleaners suffer from absorbent saturation and poisoning, which leads to off gassing. Also, the units become a breeding ground for microorganisms, and the activated carbon generates a potentially hazardous secondary waste stream. In this Phase I project Lynntech proposes to demonstrate the feasibility of using a reagentless advanced low temperature catalytic air-revitalizing unit based on a nanoparticulate photocatalytic filter to eliminate both chemicals and microorganisms from air. The benefits of this approach are its low cost, low power consumption, longevity, diverse flow rate capacity, size and performance. In addition, it is reagentless and it does not generate a secondary waste stream. In the Phase II project, a fully operational prototype will be delivered to NASA.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Johnson Space Center (JSC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Lynntech, Inc.	Supporting Organization	Industry	College Station, Texas

## Primary U.S. Work Locations

Texas

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Anuncia Gonzalez-martin

## Technology Areas

**Primary:**

- TX06 Human Health, Life Support, and Habitation Systems
  - └ TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - └ TX06.1.1 Atmosphere Revitalization